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AUTHOR Soares, Louise M.; Soares, Anthony T.
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ABSTRACT

This research was designed to compare the responses of disadvantaged and advantaged 5-year-olds in typical Piagetian experiments, in order to determine whether differences exist in the normative characteristics of centering, conservation, egocentricity, space conception, and irreversibility. A sample of 60 children was drawn from a metropolitan kindergarten population. The ethnic composition of the disadvantaged group was approximately one-third black, one-third Puerto Rican, and one-third white. The advantaged group was mostly white with a very small percentage comprising Asian and black minorities. Disadvantagement was determined from Federal guidelines. Five tasks were given to each of the children. The results indicated that both groups are typically incapable of taking another's point of view. Both groups were also unable to conceptualize what something might be like without experiencing or perceiving it directly. However, the advantaged group seemed to be further along in other aspects of operational thought in comparison to the disadvantaged children--decentration, reversibility, and conservation. The advantaged 5-year-olds seemed to be able to respond more correctly to the before-after facets of a particular experience, to the coordinating relationships of the various characteristics of objects, and to the maintenance of the substance of an object while it undergoes change. (Author/JM)

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Pre-Operational Thinking

in

Disadvantaged Children

Louise M. Soares
Anthony T. Soares

University of Bridgeport

Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois

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Abstract

Pre-Operational Thinking in Disadvantaged Children

Louise M. Soares, University of Bridgeport

Anthony T. Soares, University of Bridgeport

In Piagetian experiments with disadvantaged and advantaged five-year-olds, it was discovered that both groups typically indicated the preoperational aspects of ego-centrism and limited space conception. The disadvantaged children also responded normatively in the areas of centering, conservation and irreversibility; the advantaged group was more transitional, showing accelerated cognitive development. The results were explained on the basis of experiential differences.

Pre-Operational Thinking in Disadvantaged Children*

Louise M. Soares, University of Bridgeport

Anthony T. Soares, University of Bridgeport

There is implicit in much of the research into the nature of children's thinking the relationship between cognitive development and experience (Smedslund, 1966). Piaget's term, "op ations," conveys the notion of relating information from the real world to the world of thought (1958, 1960). The pre-school child makes sense of his environment predominantly by way of his perceptions (Almy, 1961). It follows, then, that varied experiences in early childhood - of the type which would further the understanding of behavior of organisms and properties of objects that make up the environment, as well as their classification - might enhance perceptual awareness and lead to a higher level of cognition and perhaps an accelerated pattern of cognitive development (Phillips, 1969).

The present study was an outgrowth of this course of thought. Specifically, the research was designed to compare the responses of disadvantaged and advantaged five-year-olds in typical Piagetian experiments, in order to determine whether differences exist in the normative characteristics of centering, conservation, egocentricity, space conception, and irreversibility.

Methodology

A sample of 60 children was drawn from a metropolitan kindergarten population. The ethnic composition of the disadvantaged group was approximately one-third black, one-third Puerto Rican, and one-third White. The advantaged group was mostly white with a very small percentage comprising Asian and black minorities. Disadvantagement was determined from federal guidelines - an annual family income of less than $4,000, living quarters of low-rent tenements or subsidized housing, and receipt of state aid or

welfare funds. Advantagement was indicated by a minimum of $7,000 annual income with at least one adult in a steady job and living in one-family homes.

Five tasks were given to each of the children. (I) The first was a modification of the three mountain problem (Piaget & Inhelder, 1956). There was one mountain with a barn and tree placed on a square table surrounded by four chairs. The child sat in one chair, and a Raggedy Andy doll was successively placed in each of the three empty chairs. The child was asked what the doll sees each time and responded by selecting from four drawings of the views.

(II) The second task was the presentation of two round balls of "play-doh," establishing the equality of their size and amount and then changing one ball into a hot dog shape. The child was asked whether they were the same or whether there was more play-doh in one than the other - followed up by "why"?

(III) The child was shown a bottle one-fourth filled with green-colored water. The question was posed if the bottle was tipping over, where would the top of the water be. The child was instructed to draw a line showing the top of the water in the picture given him. When this task was completed, he was asked to do the same thing in a picture showing the bottle on its side.

(IV) A container of 30 beads was given to the child. He was instructed to pick up a bead with each hand and then at the same time drop the bead in the left hand into a wide-mouthed jar and the one in the right hand into a narrow-mouthed jar - continuing until all the beads were gone. He was asked, "are there just as many beads in the two jars, or are there more beads in this one or that one?".

(V) In the last task two jars of the same size and shape were filled with water. The child was told to pour the water from one of them into

another jar which was tall and the second one into a squatty jar. The child was asked whether the second pair of jars had just as much water or whether there was more in one jar than the other.

Results

In Tasks I and III, there were no significant differences between the disadvantaged and advantaged subjects. No child got more than two views of the mountain problem correctly. (See Table 1)

The task of drawing the water line resulted in 94% of the disadvantaged group giving an incorrect response in both pictures and 82% of the advantaged group.

The results for Tasks II, IV, and V, however, were significantly different, with a higher rate of correct response from the advantaged group (Table 2). There were more advantaged children giving the correct response, including the reason, than disadvantaged children.

Conclusion

The results indicated that both groups of children are typically incapable of taking another's point of view, as in the mountain and doll task (Task I). Both groups were also unable to conceptualize what something might be like without experiencing or perceiving it directly, as in the water line problem (Task III). However, the advantaged group seemed to be further along in other aspects of operational thought in comparison to the disadvantaged children - decentration, reversibility, and conservation. The advantaged five-year-olds seemed to be able to respond more correctly to the before-and-after facets of a particular experience, to the coordinating relationships of the various characteristics of objects, and to the maintenance of the substance of an object while it undergoes change. They seemed to be less caught up in the perceptions of the moment, which may have resulted from more extensive and varied experiences in the real world. The disadvantaged children,

however, may not have had similar opportunities for such an experiential background. Similarly, Gaddia (1971) found that LSES children were at least a year retarded in their acquisition of conservation concepts. Moreover, the older children of LSES appeared to be even further delayed in conservation acquisition.

On the other hand, with both groups indicating evidence of egocentrism and limited space conception, the inference might be drawn as to social interaction being one antecedent of development into the next of Piaget's phases. The ability to "get into another's skin" - to get away from an egocentric position - may be increasingly facilitated with repeated interpersonal relationships when the child is compelled to take into account the perceptions and needs of others.

Table 1

Chi-Square Results of the
Mountain Task

(Task I)

Group	Number of Correct Responses			
	0	1	2	Total
Disadvantaged	13	14	6	33
Advantaged	6	17	4	27
Total	19	31	10	60

N = 60 $X^2 = 4.51$ n.s.

Table 2

Chi-Square
Results from Piagetian
Experiments with Disadvantaged
and Advantaged Children

Task	Right Answer only	Right Answer plus reason	Incorrect Response	X^2
II. Plastic Clay				
Disadvantaged	2	1	30	52.83*
Advantaged	5	9	13	
IV. Beads				
Disadvantaged	3	0	30	
Advantaged	3	14	10	56.53*
V. Water				
Disadvantaged	1	0	32	
Advantaged	3	12	12	75.09*

*$p < .001$ N = 60

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